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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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EXAMINER

LIANG, LEONARD S

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| ART UNIT | PAPER NUMBER |
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2853

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/809,892

Applicant(s)

IWASE, FUMIYOSHI

Examiner

Leonard S. Liang

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 03/25/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to because reference 24 of figures 5A, 6A, and 7A is in Japanese. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 24. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be

Art Unit: 2853

labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 39a, 39b, 41, 42, 43, 44, 46a, 46c. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Figure 8 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities:

- Page 1 of the specification mentions a "patent document 1." It is not clear what this patent document 1 is. Is this a figure reference or a reference to prior related art? It is requested that the applicant clarify this language
- The Brief Description of Drawings lists figures 5-7. They should be listed figures 5A-B, 6A-B, and 7A-B

Appropriate correction is required.

Claim Objections

Claims 5-7 are objected to because of the following informalities:

Claims 5-7 depend from claim 1, but mention first-wavelength and second wavelength LED elements. There is no antecedent basis for these elements in claim 1. There is however, antecedent basis for these elements in claim 3. It will be construed that claims 5-7 should depend from claim 3 instead.

Also, claim 5 states "wherein said plural first-wavelength LED element of said plural first-wavelength LED elements and second-wavelength LED elements..." That is redundant language that doesn't make sense. It will be construed that the claim should state "wherein said plural first-wavelength LED elements and second-wavelength LED elements..."

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2 are rejected under 35 U.S.C. 102(e) as being anticipated by Mills et al (US PgPub 20030035037).

Mills et al discloses:

- {claim 1} An ink jet printer forming an image using ultraviolet curing ink (figure 9A); an ink jet head ejecting out the ultraviolet curing ink onto a predetermined sheet (paragraph 0002-0003); moving means for moving the ink jet head relatively to the sheet (figure 9A, reference 18b); an LED provided in the moving direction of the ink jet head and emitting ultraviolet light (figure 9A, reference 102-1, 102-2; depending on moving direction)

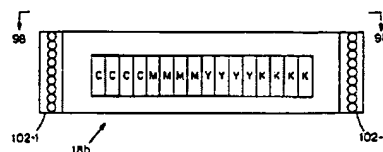


FIG. 9A

- {claim 2} wherein the LED is provided also in the direction opposite to the moving direction of the ink jet head (figure 9A, reference 102-1, 102-2; depending on moving direction)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mills et al (US PgPub 20030035037).

Mills et al discloses:

- {claims 3-7} an ink jet printer (as applied to claim 1 above)
- {claim 3} wherein the LED comprises a plurality of LED elements arranged in rows and columns (figure 9A, reference 102-1, 102-2)
- {claim 6} wherein the moving means moves the ink jet head in the main scanning direction which is a feeding direction of the sheet (figure 1; figure 9B) and in the secondary scanning direction which intersects with the feeding direction of the sheet at right angles (paragraph 0008)

Mills et al differs from the claimed invention in that it does not explicitly disclose:

- {claim 3} the plural LED elements comprise first-wavelength LED elements outputting first-wavelength ultraviolet, and second-wavelength LED elements outputting ultraviolet light whose wavelength is longer than the first wavelength
- {claim 4} wherein the LED comprises a plurality of first-wavelength LED elements and second-wavelength LED elements, and the plural first-wavelength

LED elements and second-wavelength LED elements are arranged alternately in the moving direction

- {claim 5} wherein the plural first-wavelength LED elements and second wavelength LED elements are arranged close to the side of the ink jet head against the moving direction
- {claim 6} the plural first-wavelength LED elements are arranged in the secondary direction of the ink jet head and the plural second-wavelength LED elements are arranged on the main scanning side of the ink jet head
- {claim 7} wherein the first-wavelength ranges from 250 nm to 300 nm, and the second-wavelength ranges from 300 to 370 nm

Mills et al discloses emitting a low energy UV radiation to set fluid as well as a higher energy UV radiation to cure the fluid (paragraph 0006). Mills et al also discloses combining the UV setting capability with curing for the embodiment represented by figure 9A (paragraph 0061). This naturally suggests using two different wavelengths for the LED elements, one for low energy UV radiation and one for higher energy UV radiation. Mills et al further discloses that a typical UV wavelength range is about 200 nm to about 420 nm (paragraph 0058). Taking into account the totality of these teachings, Mills et al naturally suggests:

- {claim 3} the plural LED elements comprise first-wavelength LED elements outputting first-wavelength ultraviolet, and second-wavelength LED elements outputting ultraviolet light whose wavelength is longer than the first wavelength
- {claim 4} wherein the LED comprises a plurality of first-wavelength LED elements and second-wavelength LED elements, and the plural first-wavelength

LED elements and second-wavelength LED elements are arranged alternately in the moving direction

- {claim 5} wherein the plural first-wavelength LED elements and second wavelength LED elements are arranged close to the side of the ink jet head against the moving direction
- {claim 6} the plural first-wavelength LED elements are arranged in the secondary direction of the ink jet head and the plural second-wavelength LED elements are arranged on the main scanning side of the ink jet head
- {claim 7} wherein the first-wavelength ranges from 250 nm to 300 nm, and the second-wavelength ranges from 300 to 370 nm

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Mills et al. The motivation for the skilled artisan in doing so is to gain the benefit of enhancing image quality by both setting ink as well as curing it.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hirai (US PgPub 20040036753) discloses an ink-jet image forming method.

Suzuki et al (US Pat 6783227) discloses an inkjet printer having an active ray source.

Hakamata et al (JP Pat 2003192962 A) discloses fluorescent ink for ink jet, ink jet recording method, ink cartridge, recording unit and ink jet recording apparatus.

Biegelsen et al (US Pat 6536889) discloses systems and methods for ejecting or depositing substances containing multiple photoinitiators.

Asano et al (US PgPub 20020140794) discloses a color ink jet recording apparatus.

Young (US Pat 6561640) discloses systems and methods of printing with ultraviolet photosensitive resin-containing materials using light emitting devices.

Yamamoto (US PgPub 20030164870) discloses an ink jet printer and method of hardening ink for the printer.


Suzuki et al (US PgPub 20030184631) discloses an inkjet printer having an active ray source.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard S. Liang whose telephone number is (571) 272-2148. The examiner can normally be reached on 8:30-5 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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4/3/06
MANISH S. SHAH
PRIMARY EXAMINER